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ABSTRACT

This paper proposes the idea that in smaller countries, such as Australia and New Zealand, computer-assisted education may be creating an era of neo-colonialism in education. The paper discusses the problems of attempting to develop and maintain intellectual and cultural independence in an age of high technology. In countries such as Australia which are on the periphery of the new technology, the number of computer-assisted instructional packages available will be limited, and will therefore be unlikely to meet the needs of the large variety of students they will be attempting to serve. As a model for an attempt to solve this problem, a description of an indigenous Australian, computer-assisted package for the teaching of Australian history in the middle secondary school is provided. This project developed an historical data base and utilized a variety of classroom stragegies designed to enable students to develop skills of historical inquiry. The paper concludes with three guidelines for the development of computer assisted materials for the schools: (1) a need for such materials must be established; (2) the public sector must participate in their development; and (3) educators must play a major role in developing these materials. (CG)

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TAKING A 'BYTE' OUT OF THE NEW COMPUTER INDUCED CULTURAL IMPERIALISM: A REPORT OF AN AUSTRALIAN INITIATIVE

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TAKING A 'BYTE' OUT OF THE NEW COMPUTER-INDUCED NEO-COLONIALISM: A REPORT OF AN AUSTRALIAN INITIATIVE

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INTRODUCTION

Comparative education is concerned with the salient issues with which educational systems around the world must grapple.[1] Less than a decade ago Altbach pointed to one such issue: that of neo-colonialism in education in the Third World.[2] In this paper we raise another. By way of analogy with Albach's work we aim to show that education in smaller countries like Australia and New Zealand may well be facing a new era of neo-colonialism - computer-induced. The discussion which follows highlights major aspects of the problem of attempting to develop and maintain an intellectual and cultural independence in a new age of high technology. Then, in the report which this paper makes on an Australian attempt to develop some indigenous computer-assisted instructional material, micro-aspects of the problem are dealt with in an area of the curriculum in which the development of indigenous material is perhaps more vital than most: namely, the teaching of history. From these considerations certain guidelines emerge, which we offer to all those others who share our concern for indigenous, creative endeavour in computer-assisted instruction.

A COMPUTER-INDUCED COLONIALISM?

It may be overstating the case to suggest that education in Australasia is about to enter a period of computer-induced colonialism. Altbach distinguished three features of such a period: first, that the control of education was not in the hands of those being educated; secondly, that the colonized did not decide the content, medium, format and uses of education;

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thirdly, that the schools were not set up to meet the needs which the colonized perceived, but rather those of the colonizer.3

It is true that we still have in Australia today an internal colonialism - that to which Aboriginal children are subjected. This has been acknowledged4 and has been well documented.5 Aboriginal children are held to educational ransom in many Australian classrooms, where, for example, from their earliest days at school, language skills are demanded of them which these children have not had the opportunity to develop; and opportunities are denied them for the physical exploration and manipulation of objects, so that they cannot acquire information about such objects in a way they are culturally endowed to do.

But, paradoxically, it is not necessarily the case that the development of indigenous, computer-assisted instuctional material should perpetuate this internal colonialism. On the contrary, it could contribute a great deal to the alleviation of this undesirable situation. Computer-assisted instruction embraces a range of strategies: from drill and practice work, through diagnostic and remedial work, to data analysis and simulation. In the latter, reality is represented by a model which is supposed to behave like some part of the real world. Simulation can take the form of a game in which the student is able to take control of one aspect of the situation being modelled. He or she can make decisions, negotiate, develop alternative strategies, test them, experience the outcome of choices made, and develop some insight into the different factors involved and their importance. It is in the field of simulation that we believe the computer can be put to best use in instruction.

And, it has been argued elsewhere,6 that it will be through giving Aboriginal children an opportunity to exert some power in a play situation <u>in the classroom</u>, that something might be done

to redress that sense of powerlessness, that sense of being "born losers", which stands so much in the way of Aboriginal children even attempting to learn, much less succeeding at it! In other words, computer-assisted instruction could assist, not in perpetuating the domination of the white teacher colonizer, but in setting the Aboriginal child free to learn.

It is to foreshadow much of the ensuing discussion to add here that such computer simulation games should deal with the reality the majority of Australian Aboriginal children experience - a rural reality, action-packed with floods and droughts, bush fires and locust plagues, kangaroo shoots and wild pig hunts. The objectives of such games need not, of course, be purely affective. They could range from a primary focus on language development - where the students are simply being introduced to a number of new words - to a social studies emphasis: for example, on the precariousness of the success of the kangaroo hunt, and, by way of on harm, to a realization on the part of all Australian children, Aboriginal and white alike, of the success the Aboriginal people experienced in what is a demanding hunting exercise.

A COMPUTER-INDUCED NEO-COLONIALISM?

But just as computer-assisted instruction need not lead to Australian white-colonizer domination in the classroom, as long as material true to the Australian Aboriginal child's cultural experience is presented, neither need there be a new computer-induced, neo-colonialism in the white child's educational experience, provided there is extensive, indigenous, computer instructional material created. But some reflection on aspects of neo-colonialism in Third World education, as identified by Altabch, seems to suggest that, in this new technolgocial era in education, countries like Australia and

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New Zealand, which are at the periphery of high technology development, will suffer a similar sort of educational domination to that exerted over the so-called independent, Third World countries by the industrialized world. For it is other countries which, by virute of their size, wealth, technological development and well-established research and develoment centres in computer assisted instuction, will constitute the centres of educational excellence on which Australia and other countries like her will come to depend for the hardware and software of modern educational technology. As Altbach wrote of the Third World, post-independence experience in education, "... if the technologies, models and techniques are foreign, strong elements of neo-colonialism enter into the equation."[7]

After all, the infrastructures of government, educational, and industry which we experience today are still basically those of a labour-intensive, colonial era. A computer-intensive society demands a computerized educational system - not one in which machines replace people, but one in which educational organizations are re-structured to effect the best possible interaction of people, hard-ware and soft-ware. Just what form this re-organization should take is difficult to visualise, because there are no readily avialable models. Not only that, as the Third World experience has pointed up, the cost of changing educational structures is very high.[8] In post-independent Third World countries, indigenously created text-books should have been produced, but few were forthcoming, because text-book development is an expensive and time-consuming proposition. Likewise, in countries on the periphery of high technology development, there will be few, indigenous, computer-assisted instructional packages because of the time, expertise and money that the development of such material demands.

The school-based curriculum development movement in Australia is already in danger of foundering for lack of time and expertise

in curriculum development, but the creation of whole new systems of computer-assisted and computer-managed instruction calls for a range of skills which are at an even greater premium in Australia at the present tiem. Such developments would demand, hard-ware wise, personnel skilled in the development and maintenance of machinery and facilities, computing and control devices, networks for communication interaction, the organization of education material flows and engineering support for monitoring. The software aspects of such systems would require personnel skilled in the design and development of models, algorithms and programs, catalogues and documentation, work instructions, teaching and learning standards, administrative laws and regulations, the organization of information flows and of system memory. New educational personnel would be needed for the development, implementation and monitoring of each element in both the hardware and software aspect. And traditional personnel would need to be re-educated as learning diagnosticians, learning "perscription" specialists, interdisciplinary liaison specialists, counsellors and community learning facilitators.9

The constraints on the development of new technological infrastructures and the creation of indigenous, human, hardware and software resources for Australasian education in the computer age, are just those which militated against radical departures from pre-independence, educational patterns in Third World countries. The market is small; local printing and publishing facilities are not competitive with multi-national corporations; high costs are involved in changing or extending teacher education programs; in re-educating teachers; in conducting in-service programs. We have to import technological expertise, make use of computer expertise from abroad, expend funds on licences for new "compunications" innovation. In the meantime, a subtle foreign control over education will be exerted, as we become increasingly more dependent on other more technologically advanced countries for educational goods and services - as we adopt or adapt their educational objectives, use their

instructional models, and exploit their support materials, pretests and post tests, students' manuals and work-sheets, teachers' guides and resource guides and program listings.

As the Third World countries could not meet their "book hunger", so will we not be able to meet the hunger for computer software and instructional support materials to which the current proliferation of micro-computers in Australian schools is already giving keen edge. Not only are too few, indigenous, instructional packages being produced, but too few which meet local, much less state or national priorities, if indeed any such priorities have been established. In the meantime, very sophisticated production standards and methods of distribution for computer software have already been set up in Australia by multi-national, hardware firms, software and publishing companies. While these are mainly concerned with their own commerical activities, as were the private business firms, publishers and film companies which operated in Third World countries, they can only likewise further a new computer-induced neo-colonialism, as they distribute materials which cannot avoid reflecting the orientations of other countries and their cultures.

Of course, as Altbach himself recognized, no nation or culture is truly independent in terms of its intellectual life.10 There must be exchange for the intellectual growth of a nation and its further cultural and technological development. But, as Altbach pointed out, there should never be an "unfavourable balance of intellectual payments" or the control of the intellectual life of a nation, will fall into foreign hands.

WHAT CAN BE DONE ABOUT IT?

As every comparative educationist is well aware, experience might substitute for experiment. That is why we would like to draw attention to what we regard as a pioneering Australian attempt in the production of indigenous, computer software, curriculum material for the teaching of Australian history. A detailed account of this work was recently presented at the Australian Computer Education Conference held at Latrobe University in May 1983, 11 but the main features of the project, commenced in 1979, may be briefly recapitulated here. The chief objective of the project was to use the microcomputer as a tool for the teaching of Australian History in the middle secondary school. The strategy parameters of the project were defined in the light of this objective:

(i) there had to be maximum access to the computer by the individual pupil, even if the History teacher had available only one microcomputer for the use of his or her class, and thus effective classroom strategies had to be developed;12

(ii) the historical data base had to refer not only to a topic in the study of which legitimate use could be made of quantitative evidence, but it had also to be of a volume sufficient to warrant the use of a microcomputer for data storage retrieval and analysis;13

(iii) further the data had to be such that it could be encoded without gross distortion, but susceptible to decoding using analytic concepts within the grasp of middle secondary school students;14

(iv) the program had to be such that it did not preempt the development of skills in historical thinking;[15]

(v) and finally the computerized historical database had to be integrated with other primary and secondary source materials, for genuine historical teaching and learning demands the use of a range of source materials.[16]

In the instructional materials developed for the teaching of Australian History a variety of classroom strategies were used to enable the students to develop skills of historical inquiry. Some of that historical inquiry could only be carried out by retrieving and analysing the data stored in the computerized historical database. In the course of this inquiry the students experienced the historian's frequent frustration at the incompleteness of available evidence, and the potential and limitations of computer technology. Student response during the classroom trials of part of one unit, revealed much approval of the microcomputer work, coupled with the complaint that there was not enough of it - a complaint being remedied as the drafts are being finalized and further units developed.[18] Further work in this project has left no doubt that experienced classroom teachers have a significant role to play in the development of appropriate computer software for Australasian schools, and that teachers if given sufficient encouragement, are willing and able to use the microcomputer as an educational tool, provided that its use is consonant with relevant and valid curricular objectives.

SOME EMERGING GUIDELINES

What then are the guidelines which should govern the encouragement of Australasian initiatives in the development

of microcomputer software for schools? First, it must be accepted that there is a need for such initiatives to be encouraged. It is clear that policy questions of national significance must quickly be determined: who should decide how and what our teachers teach and our children learn; what should be the aims of using computers in education; how should our educational systems be restructured to effect the best integration of human resources and technology? It is equally clear that in determining the answers to these questions it is unlikely that any national policy will deny the validity of the need for the development of innovative teaching materials, particularly in the culture dependent curriculum areas of Australasian History and the Social Sciences.

However, the commerical reality is that the local Australasian market is a small one. Thus a second guideline emerges. It must also be accepted that Australasian initiatives in the development of microcomputer software, especially for the culture-dependent curriculum areas, need public sector support. Of course, this second guideline involves yet a further demand upon the public purse, but perhaps, like certain Third World Countries did in a desperate bid for intellectual independence,[19] it is not inconceivable that the importation of foreign instructional material could be restricted to assist the growth of an indigenous, educational, microcomputer software industry.

A third guideline also emerges from what has been discussed in this paper. Computers were developed for science, commerce and industry. In the development of the use of computers in education it is essential that educators play a key role. Our experts in the various disciplines which the curriculum embraces, and especially our experienced practising classroom teachers, must play a key role in the development of educational, microcomputer software for our schools.

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In conclusion it might be said that unless firm guidelines are promptly clarified and adopted, our indecisiveness will make us vulnerable. It could place the destiny of our educational system at the mercy of foreign intellectual, cultural and technological expertise. It may be that there will be only one school in the global village and it will not be ours, unless we begin to 'byte' our way to cultural freedom now!

NOTES AND REFERENCES

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6. Ibid. p.75.

7. Altbach, P. op. cit., p.32.

8. Op. cit., p.33.

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10. Altbach, P. op.cit., p.301.

11. Shorten, R., "Of Shoes - and Steps - and Sealing Wax" : Of Bytes and Loops and Strings", in A.D. Salvas (ed.) Could You Use A Computer (Proceedings of 1983 Australian Computer Education Conference), Computer Education Group of Victoria, Melbourne, 1983, pp.318 - 330.

The project was undertaken by the writer, Mrs. A Feeman and Mrs. E. McCoy, of the Monash University, Faculty of Education, Methods and Practice of Teaching History Staff; and Mrs. A. McDougall, Lecturer in Computer Education, Faculty of Education, Monash University. They were greatly assisted by the critical advice and commentary prepared at various stages during the development of the project by a number of experienced History teachers.

12. Ibid., p. 324.

13. Loc. cit.

14. Loc. cit.

15. Ibid., pp.324-25.

16. Loc. cit.

17. The preparation of three units of study was undertaken in the initial phase of the project. These are "Beyond the Breakers. Australia's Colonial Steamships, 1830 - 1910" A.R. Shorten and A. McDougall, 1982. "Beyond the Limits : Victorians and their Land, 1900 - 1939", E. McCoy and A. McDougall, 1982; "Beyond Hope : Australian Wommen in Two World Wars, 1914 -1918 and 1939-1945", A. Feehan and A. McDougall, 1982.

18. Shorten, A.R., op.cit., p. 326. Further units dealing with mainstream topics in Australian History are presently being prepared by Mrs. A. Feehan, Mrs. E. McCoy and Dr. A.R. Shorten.

19. Altbach, P. op.cit. p.323.